

GUIDE TO MECHANICAL TOLERANCES FOR HYDRO ELECTRIC GENERATORS

MECHANICAL TOLERANCES				
	Deviation ¹			
Parameter	Definitions	Erection	Acceptable	Critical
Air gap	Maximum difference between air gap measured at any point on a single plane and theoretical (nominal) air gap.	13%	20%	30%
Stator roundness	Difference between maximum inside radius and minimum inside radius, measured from the rotor rotation axis.	7%	12%	20%
Stator concentricity	Difference between rotor rotation axis and the best stator centre measure on the same plan and calculated from the rotor reference pole	5%	7.5%	10%
Rotor roundness	Difference between maximum outside radius and minimum outside radius along the same horizontal plane	6%	8%	10%
Rotor concentricity	Difference between the rotor rotation axis and the best rotor centre calculated from the outside radius of each pole on the same plane	1.2%	2.5%	4%
VIBRATION				
Shaft	Hydraulic units (0-300 rpm)	4.0 ²	6.5	12.0
	Hydraulic units (300-1200 rpm)	2.0	3.0	6.0
Stator core	Measured between the core and the frame	1.0	1.4	2.0
Frame	Measured between the frame and the sole plate	1.0	2.5	5.0
Notes:				
1 - Deviations expressed in percentage of theoretical (nominal) air gap.				
2 - Vibrations expressed in mils peak-to-peak				
3 - Ref.: Guide technique-Division Études et Normalisation, VP Ingénierie HQ. Guide for Erection Tolerances and Shaft System Alignment, CEA				